

## CLAIMS

## WELDING TONGS

1. Welding tongs (1) with two limbs (2, 3) which can be moved relative to one another, of which at least one first limb (2) is supported such that it can be moved relative to a drive housing (10) between an insertion position and a welding position (4, 5), in which said welding position a work piece which is to be welded is clamped to welding contacts (6, 7) on ends (8, 9) of the welding tong limbs (2, 3), said contacts being essentially inclined towards each other,  
**characterised in that**  
the welding tongs (1) comprise a particularly self-supporting moveable housing (11), which can move along the drive housing (10) and which comprises a retaining device (12) which supports the first welding tong limb (2) outside of the drive housing (10).
2. Welding tongs according to Claim 1,  
**characterised in that**  
the retaining device (12) can be moved together with the first welding tong limb (2) between its insertion and welding positions (4, 5).
3. Welding tongs according to Claim 1 or 2,  
**characterised in that**  
the moveable housing (11) is supported for movement on the drive housing (10) and / or on another part of the welding tongs by at least one linear guide, in particular a sliding guide (13).
4. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the sliding guide (13) comprises a guide rail (14, 15, 16, 17) and at least one bogie (18, 19, 20, 21), which are moveable relative to one another.
5. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the guide rail (14 - 17) on the moveable housing (11) and the bogie (18 - 21) on the drive housing (10) are each particularly detachably mounted.
6. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the bogie (18 to 21) is fixed immovably on the drive housing (10).

7. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
at least two bogies are arranged spaced from one another in the displacement direction (34) of the guide rail (14 - 17).
8. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the bogie (18 - 21) comprises a lubricant reservoir (94).
9. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the moveable housing (11) comprises two housing halves (22, 23), arranged essentially symmetrically to one another and extending in the displacement direction (34) and which are detachably joined together at least at their ends by a front and / or rear face plate (24, 25), wherein the front face plate is formed as a retaining device (12).
10. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the housing halves (22, 23) are formed in an approximate C-shape and a cover panel (28) is arranged between two mutually facing upper ends (26, 27) of the housing halves (22, 23).
11. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
insertion grooves (29) for the circumferential retention of the cover panel (28) are formed in the upper ends (26, 27) of the housing halves (22, 23) and in mutually facing inner sides (30, 31) of the face plates (24, 25).
12. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
each housing half (22, 23) comprises on its inner side (32, 33) two rail indentations (35, 36) running in the displacement direction (34) at least for the insertion of the lower ends (37) of the corresponding guide rails (14 - 17).
13. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the guide rails (14 - 17) are detachably mounted in the associated rail indentation (35 to 36), in

particular by screwed joints.

14. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
a fixing slot formed in the height direction (39) of the guide rail (14 - 17) in the housing halves (22, 23) runs along the rail indentation (35, 36) and opens out into the same or is arranged adjacent to the same and a number of clamping holes (40) running transversely to the fixing slot (38) are formed in the housing halves (22, 23) for screwing in appropriate clamping screws (41).
15. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the rail indentation (35, 36) formed with a different depth comprises indentation sections (42, 43) adjacent to one another, wherein the first indentation section (42) with a shallower depth accommodates the lower end (37) of the guide rail (14 - 17) and a pressure pad (44) is arranged in the second indentation section (43) with a greater depth, which in particular detachably fixes the guide rail (14 - 17) within the rail indentation (35, 36) relative to a rail reference edge (45).
16. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the rail reference edge (45) is formed by a step edge (46) between the two indentation sections (42, 42) and / or by an edge (47) of the rail indentation (35, 36) lying opposite the pressure pad relative to the guide rail (14 - 17).
17. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the pressure pad (44) is mounted detachably within the second indentation section (43) and for force application in particularly sideward in the direction of the rail reference edge (45).
18. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
screws and in particular set screws (48) are provided for the sideward application of force to the pressure pad (44).
19. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the bogie (18 to 21) can be pressed on a bogie reference edge (49) formed outside on the drive housing (10) and extending in the displacement direction (34).

20. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
screws and in particular set screws (50) are provided for pressing on the bogie reference edge (49).
21. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
a drive device (85) within the drive housing (10) comprises a screw drive (52) with threaded rod (53) and screw drive nut (54) as a mechanical adjusting device (51) in the displacement direction (34), wherein the screw drive nut (54) is arranged rotatable, but axially fixed and the threaded rod (53) rotationally fixed, but axially moveable, the said threaded rod (53) engaging, particularly rotationally fixed, with its extended end (55) in an indentation (56) formed on the inner side (30) of the front face plate (24) and being mounted detachably on the front face plate (24).
22. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the first welding tong limb (2) is particularly detachably mounted on the outer side (57) of the front face plate (24) opposite the inner side (30).
23. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the cover panels (58) on the lower ends (59) of the housing halves (22, 23) protrude in the direction of the drive housing (10).
24. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the drive device (85) comprises a particularly magnetically operating brake device (60).
25. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the bogie (18 - 21) comprises circulating rolling elements (61) for reducing friction.
26. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the rear face plate (25) is essentially inverse U-shaped and partially grips around the drive housing (10) with its U-opening.

27. Welding tongs according to one of the aforementioned claims,  
**characterised in that**

the drive housing (10) comprises a detachable rear housing section (62) lying opposite the first welding tong limb (2) with electrical cables (63) and / or a control electronics unit (64) and / or a tachometer generator (65) or similar device, the said rear housing section (62) being in particular arrangeable and mountable in different rotational positions relative to the remaining drive housing (10).

28. Welding tongs according to one of the aforementioned claims,  
**characterised in that**

the drive housing (10) comprises a sideward protruding mounting flange (66) for the detachable mounting of a base plate (67).

29. Welding tongs according to one of the aforementioned claims,  
**characterised in that**

the base plate (67) can be directly or indirectly connected to a handling device.

30. Welding tongs according to one of the aforementioned claims,  
**characterised in that**

with an indirect connection to the handling device a tongs compensating device (68) is arranged between the said handling device and the base plate.

31. Welding tongs according to one of the aforementioned claims,  
**characterised in that**

the tongs compensating device (68) comprises an adjustment device (69) for the second welding tong limb (3) and / or the drive housing (10).

32. Welding tongs according to one of the aforementioned claims,  
**characterised in that**

the adjustment device (69) comprises a displacement device (70) between particularly the base plate (67) and a base frame (71), which can be connected to the handling device and a drive device (72).

33. Welding tongs according to one of the aforementioned claims,  
**characterised in that**

the displacement device (70) comprises at least two guide rails (73, 74) and bogies (75, 76) assigned to them.

34. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the guide rails (73, 74) are detachably fixed to the base frame (71) and the bogies (75, 76) can be moved along the guide rails (73, 74), wherein they are detachably fixed to the base plate (67).
35. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
at least two bogies (75, 76) are assigned to each guide rail (73, 74).
36. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the bogies (75, 76) and / or the guide rails (73, 74) are mounted on the base plate (67) or respectively on the base frame (71) relative to the reference edges (77, 78).
37. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the second welding tong limb (3) is detachably mounted at its mounting end (80) on an underside (79) of the base plate (67) facing away from the drive housing (10).
38. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
the drive housing (10) with the moveable housing (11) in place, the base plate (67), the tongs compensating device (68) and the base frame (71) are arranged essentially one above the other and exhibit essentially the same dimensions in the displacement direction (34) and / or in the direction transverse to the displacement direction.
39. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
a bellows (81) of the drive device (85) is detachably mounted with one end (82) on the inner side (30) of the front face plate (24) and its other end (83) particularly on a shoulder (84) within the drive housing (10).
40. Welding tongs according to one of the aforementioned claims,  
**characterised in that**  
a positively locked joint is formed between the face plates (24, 25) and the housing halves (22, 23) and / or between the base plate (65) and drive housing (10) or moveable housing (11), in particular

by locating pins, feather keys, film with hard particles or similar components.